NC/QC/BD/W5/2020-21/P1-1-W16 Date: 04-11-2020

TEST REPORT ON WET MIX MACADAM MIX
(GRADATION TEST)

Sub: To conduct Gradation test on Wet Mix Macadam (WMM) Mix.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

1. Gradation Test:
TABLE 1.1

Sieve Size mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Specified Limits as per MoRTH Specifications, V Revision-2013
53.00	**100.00**	100
45.00	**97.05**	95-100
26.50	**---**	-
22.40	**75.15**	60-80
11.20	**52.80**	40-60
4.75	**34.05**	25-40
2.36	**23.80**	15-30
0.600	**20.55**	8-22
0.075	**3.45**	0-5

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Date: 04-11-2020

TABLE 1.2

SL No	Test conducted	Test Results	Tests Conforms to IS 2386(Part I to IV)– 1963 (Reaffirmed on 2002) & Requirements as per IS:383-1970 & M.o.R.T.H Specification, V Revision -2013.
1.	Aggregate Impact Value	**26.76%**	Not more than 30.00 %
2.	Combined Flakiness and Elongation index, %	**28.34%**	Not more than 35.0 %
3.	Water absorption, %	**0.42 %**	Not more than 2.0 %
4.	Plasticity Index, %	**NP**	Not more than 6.0 %

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NC/QC/BD/W5/2020-21/P1-1-BD1 Date: 02-11-2020

1. TEST REPORT ON BITUMEN SAMPLE:

Sub: Testing of Bitumen sample VG-30 Grade.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.
Technical Reference: Ministry of Road Transport and Highways, V Revision, 2013 and IS 73: 1992.

TABLE 1.1 ;

SL No	Details	Test Results	Requirements as per I.S 73 –1992 Specifications
1.	Penetration at 25^0 C	**52.60^0 C**	Min. 45
2.	Ductility Value at 25^0 C	**108.70 cm**	40
3.	Flash point	**246^0 C**	Minimum 220^0 C
4.	Softening point	**51.30^0 C**	Min. 47

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NC/QC/BD/W5/2020-21/P1-1-CD1 **Date: 02-11-2020**

1. TEST REPORT ON COARSE AGGREGATE:

Sub: Testing of Coarse Aggregate used in Dense Graded Bituminous Macadam.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TABLE 1.1 ;

SL No	Test conducted	Test Results	Tests Conforms to IS 2386(Part I to IV)– 1963 (Reaffirmed on 2002) & Requirements as per IS:383-1970 & M.o.R.T.H Specification, V Revision -2013.
1.	Aggregate Impact Value	**23.09%**	Not more than 27.00 % for DBM
2.	Combined Flakiness and Elongation index, %	**26.71%**	Not more than 35.0 %
3.	Water absorption, %	**0.42%**	Not more than 2.0 %
4.	Specific gravity	**2.62**	-------
5.	Soundness	**6.56 %**	Max. 12 % in Sodium Sulphate

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NC/QC/BD/W5/2020-21/P1-1-DBM1 Date: 06-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for DBM mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

A. Type of Construction : **Dense Graded Bituminous Macadam.**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **4.52 %**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-10 of MORTH Specfications-2013 DBM (Grading - 2)
37.5	**100**	100
26.5	**96.25**	90-100
19.0	**83.15**	71-95
13.20	**74.40**	56-80
4.75	**48.65**	38-54
2.36	**36.05**	28-42
0.300	**17.90**	7-21
0.075	**6.40**	2-8

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NC/QC/BD/W5/2020-21/P1-1-DS1 Date: 07-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for DBM mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of DBM (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Dense Bituminous Macadam, Grade-2 as per M.o.R.T&H (IV Revision)-2001 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1238**	900
2	Marshall Flow at 60°C, mm.	**3.24**	2.0 - 4.0

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NC/QC/BD/W5/2020-21/P1-1-DBM2 Date: 06-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for DBM mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

A. Type of Construction : **Dense Graded Bituminous Macadam.**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **4.53 %**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-10 of MORTH Specfications-2013 DBM (Grading - 2)
37.5	**100**	100
26.5	**96.45**	90-100
19.0	**80.25**	71-95
13.20	**71.60**	56-80
4.75	**45.10**	38-54
2.36	**37.80**	28-42
0.300	**19.20**	7-21
0.075	**7.15**	2-8

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NC/QC/BD/W5/2020-21/P1-1-DS2 Date: 07-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for DBM mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of DBM (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Dense Bituminous Macadam, Grade-2 as per M.o.R.T&H (IV Revision)-2001 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1256**	900
2	Marshall Flow at 60°C, mm.	**3.44**	2.0 - 4.0

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NC/QC/BD/W5/2020-21/P1-1-DBM3 Date: 09-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for DBM mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

A. Type of Construction : **Dense Graded Bituminous Macadam.**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **4.54 %**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-10 of MORTH Specfications-2013 DBM (Grading - 2)
37.5	**100**	100
26.5	**94.15**	90-100
19.0	**86.15**	71-95
13.20	**72.40**	56-80
4.75	**48.65**	38-54
2.36	**34.20**	28-42
0.300	**18.75**	7-21
0.075	**6.15**	2-8

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NC/QC/BD/W5/2020-21/P1-1-DS3 Date: 10-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for DBM mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of DBM (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Dense Bituminous Macadam, Grade-2 as per M.o.R.T&H (IV Revision)-2001 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1258**	900
2	Marshall Flow at 60°C, mm.	**3.46**	2.0 - 4.0

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NC/QC/BD/W5/2020-21/P1-1-DBM4 Date: 09-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for DBM mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

A. Type of Construction : **Dense Graded Bituminous Macadam.**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **4.53 %**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-10 of MORTH Specfications-2013 DBM (Grading - 2)
37.5	**100**	100
26.5	**98.05**	90-100
19.0	**82.30**	71-95
13.20	**75.65**	56-80
4.75	**48.35**	38-54
2.36	**37.95**	28-42
0.300	**18.10**	7-21
0.075	**6.45**	2-8

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NC/QC/BD/W5/2020-21/P1-1-DS4 Date: 10-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for DBM mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of DBM (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Dense Bituminous Macadam, Grade-2 as per M.o.R.T&H (IV Revision)-2001 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1248**	900
2	Marshall Flow at 60°C, mm.	**3.34**	2.0 - 4.0

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NC/QC/BD/W5/2020-21/P1-1-DBM5 Date: 10-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for DBM mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

A. Type of Construction : **Dense Graded Bituminous Macadam.**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **4.52 %**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-10 of MORTH Specfications-2013 DBM (Grading - 2)
37.5	**100**	100
26.5	**96.35**	90-100
19.0	**80.05**	71-95
13.20	**76.30**	56-80
4.75	**45.90**	38-54
2.36	**38.55**	28-42
0.300	**17.80**	7-21
0.075	**6.55**	2-8

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NC/QC/BD/W5/2020-21/P1-1-DS5 Date: 11-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for DBM mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of DBM (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Dense Bituminous Macadam, Grade-2 as per M.o.R.T&H (IV Revision)-2001 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1242**	900
2	Marshall Flow at 60°C, mm.	**3.36**	2.0 - 4.0

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NC/QC/BD/W5/2020-21/P1-1-DBM6 Date: 11-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for DBM mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

A. Type of Construction : **Dense Graded Bituminous Macadam.**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **4.54%**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-10 of MORTH Specfications-2013 DBM (Grading - 2)
37.5	**100**	100
26.5	**95.60**	90-100
19.0	**82.35**	71-95
13.20	**74.20**	56-80
4.75	**47.35**	38-54
2.36	**35.95**	28-42
0.300	**19.10**	7-21
0.075	**6.40**	2-8

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NC/QC/BD/W5/2020-21/P1-1-DS6 Date: 12-11-2020

LTEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for DBM mix sample.

{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}

Ref.: Material testing/PMC/20-21,

Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of DBM (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Dense Bituminous Macadam, Grade-2 as per M.o.R.T&H (IV Revision)-2001 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1232**	900
2	Marshall Flow at 60°C, mm.	**3.24**	2.0 - 4.0

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NC/QC/BD/W5/2020-21/P1-1-DBM7 Date: 12-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for DBM mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

A. Type of Construction : **Dense Graded Bituminous Macadam.**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **4.51%**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-10 of MORTH Specfications-2013 DBM (Grading - 2)
37.5	**100**	100
26.5	**95.05**	90-100
19.0	**83.60**	71-95
13.20	**72.35**	56-80
4.75	**46.80**	38-54
2.36	**34.25**	28-42
0.300	**18.55**	7-21
0.075	**6.85**	2-8

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NC/QC/BD/W5/2020-21/P1-1-DS7 Date: 13-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for DBM mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of DBM (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Dense Bituminous Macadam, Grade-2 as per M.o.R.T&H (IV Revision)-2001 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1252**	900
2	Marshall Flow at 60°C, mm.	**3.40**	2.0 - 4.0

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NC/QC/BD/W5/2020-21/P1-1-DS8 Date: 13-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for DBM mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of DBM (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Dense Bituminous Macadam, Grade-2 as per M.o.R.T&H (IV Revision)-2001 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1246**	900
2	Marshall Flow at 60°C, mm.	**3.32**	2.0 - 4.0

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NC/QC/BD/W5/2020-21/P1-1-DBM9 Date: 13-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for DBM mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

A. Type of Construction : **Dense Graded Bituminous Macadam.**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **4.52 %**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-10 of MORTH Specfications-2013 DBM (Grading - 2)
37.5	**100**	100
26.5	**93.65**	90-100
19.0	**85.25**	71-95
13.20	**71.35**	56-80
4.75	**46.25**	38-54
2.36	**33.10**	28-42
0.300	**18.50**	7-21
0.075	**7.05**	2-8

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NC/QC/BD/W5/2020-21/P1-1-DS9 Date: 14-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for DBM mix sample.
{Project*: Improvements to roads, drains and other developmental works in Ward No- 01 &02. Under SWM head in Chief Minister Nava Nagarothana grants of Yelahanka division.(Package -07).}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of DBM (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Dense Bituminous Macadam, Grade-2 as per M.o.R.T&H (IV Revision)-2001 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1254**	900
2	Marshall Flow at 60°C, mm.	**3.46**	2.0 - 4.0

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NC/QC/BD/W5/2020-21/P1-1-BB1 Date: 13-11-2020

1. TEST REPORT ON BITUMEN SAMPLE:

Sub: Testing of Bitumen sample VG-30 Grade.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.
Technical Reference: Ministry of Road Transport and Highways, V Revision, 2013 and IS 73: 1992.

TABLE 1.1 ;

SL No	Details	Test Results	Requirements as per I.S 73 –1992 Specifications
1.	Penetration at 25^0 C	**51.30^0 C**	Min. 45
2.	Ductility Value at 25^0 C	**108.0 cm**	40
3.	Flash point	**235^0 C**	Minimum 220^0 C
4.	Softening point	**50.60^0 C**	Min. 47

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NC/QC/BD/W5/2020-21/P1-1-CB1 Date: 13-11-2020

1. TEST REPORT ON COARSE AGGREGATE:

Sub: Testing of Coarse Aggregate used in Bituminous Concrete.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TABLE 1.1 ;

SL No	Test conducted	Test Results	Tests Conforms to IS 2386(Part I to IV)– 1963 (Reaffirmed on 2002) & Requirements as per IS:383-1970 & M.o.R.T.H Specification, V Revision -2013.
1.	Aggregate Impact Value	**22.89 %**	Not more than 24.00 %
2.	Combined Flakiness and Elongation index, %	**27.56 %**	Not more than 35.0 %
3.	Water absorption, %	**0.42%**	Not more than 2.0 %
4.	Specific gravity	**2.62**	-------
5.	Soundness	**5.24%**	Max. 12 % in Sodium Sulphate

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NC/QC/BD/W5/2020-21/P1-1-BC1 Date: 17-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for BC mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

A. Type of Construction : **Bituminous Concrete**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **5.41 %**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-17 of MORTH Specfications-2013 BC (Grading - 2)
19.0	**100**	100
13.2	**97.25**	90-100
9.5	**81.10**	70-88
4.75	**67.50**	53-71
2.36	**52.25**	42-58
1.18	**44.35**	34-48
0.600	**31.75**	26-38
0.300	**24.60**	18-28
0.150	**18.25**	12-20
0.075	**7.15**	4-10

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NC/QC/BD/W5/2020-21/P1-1-BS1 Date: 18-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for BC mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of BC (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Bituminous Concrete, Grade-2 as per M.o.R.T&H (V Revision)-2013 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1368**	900
2	Marshall Flow at 60°C, mm.	**3.56**	2.0 - 4.0

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NC/QC/BD/W5/2020-21/P1-1-BC2 Date: 17-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for BC mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

A. Type of Construction : **Bituminous Concrete**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **5.43%**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-17 of MORTH Specfications-2013 BC (Grading - 2)
19.0	**100**	100
13.2	**95.25**	90-100
9.5	**84.10**	70-88
4.75	**67.45**	53-71
2.36	**54..80**	42-58
1.18	**40.65**	34-48
0.600	**34.50**	26-38
0.300	**25.60**	18-28
0.150	**19.25**	12-20
0.075	**7.40**	4-10

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NC/QC/BD/W5/2020-21/P1-1-BS2 Date: 18-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for BC mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of BC (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Bituminous Concrete, Grade-2 as per M.o.R.T&H (V Revision)-2013 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1352**	900
2	Marshall Flow at 60°C, mm.	**3.40**	2.0 - 4.0

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NC/QC/BD/W5/2020-21/P1-1-BC3 Date: 18-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for BC mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

A. Type of Construction : **Bituminous Concrete**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **5.44 %**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-17 of MORTH Specfications-2013 BC (Grading - 2)
19.0	**100**	100
13.2	**95.65**	90-100
9.5	**81.30**	70-88
4.75	**67.95**	53-71
2.36	**53.40**	42-58
1.18	**41.70**	34-48
0.600	**34.05**	26-38
0.300	**22.35**	18-28
0.150	**18.75**	12-20
0.075	**6.20**	4-10

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NC/QC/BD/W5/2020-21/P1-1-BS3 Date: 19-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for BC mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of BC (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Bituminous Concrete, Grade-2 as per M.o.R.T&H (V Revision)-2013 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1346**	900
2	Marshall Flow at 60°C, mm.	**3.32**	2.0 - 4.0

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NC/QC/BD/W5/2020-21/P1-1-BC4 Date: 18-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for BC mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

A. Type of Construction : **Bituminous Concrete**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **5.44 %**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-17 of MORTH Specfications-2013 BC (Grading - 2)
19.0	**100**	100
13.2	**97.05**	90-100
9.5	**82.45**	70-88
4.75	**65.95**	53-71
2.36	**54.25**	42-58
1.18	**41.70**	34-48
0.600	**34.25**	26-38
0.300	**23.85**	18-28
0.150	**18.60**	12-20
0.075	**7.10**	4-10

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ಬಿ.ಬಿ.ಎಂ.ಪಿ, ಬೆಂಗಳೂರು-24

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NC/QC/BD/W5/2020-21/P1-1-BS4 Date: 19-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for BC mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of BC (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Bituminous Concrete, Grade-2 as per M.o.R.T&H (V Revision)-2013 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1362**	900
2	Marshall Flow at 60°C, mm.	**3.50**	2.0 - 4.0

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NC/QC/BD/W5/2020-21/P1-1-BC5 Date: 19-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for BC mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

A. Type of Construction : **Bituminous Concrete**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **5.42 %**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-17 of MORTH Specfications-2013 BC (Grading - 2)
19.0	**100**	100
13.2	**96.45**	90-100
9.5	**82.90**	70-88
4.75	**67.45**	53-71
2.36	**53.75**	42-58
1.18	**42.50**	34-48
0.600	**34.85**	26-38
0.300	**22.10**	18-28
0.150	**17.60**	12-20
0.075	**8.30**	4-10

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NC/QC/BD/W5/2020-21/P1-1-BS5 Date: 20-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for BC mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of BC (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Bituminous Concrete, Grade-2 as per M.o.R.T&H (V Revision)-2013 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1368**	900
2	Marshall Flow at 60°C, mm.	**3.54**	2.0 - 4.0

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NC/QC/BD/W5/2020-21/P1-1-BC6 Date: 19-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for BC mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

A. Type of Construction : **Bituminous Concrete**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **5.42%**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-17 of MORTH Specfications-2013 BC (Grading - 2)
19.0	**100**	100
13.2	**95.25**	90-100
9.5	**84.10**	70-88
4.75	**66.35**	53-71
2.36	**51.80**	42-58
1.18	**41.30**	34-48
0.600	**32.85**	26-38
0.300	**25.65**	18-28
0.150	**19.05**	12-20
0.075	**7.35**	4-10

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NC/QC/BD/W5/2020-21/P1-1-BS6 Date: 20-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for BC mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of BC (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Bituminous Concrete, Grade-2 as per M.o.R.T&H (V Revision)-2013 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1352**	900
2	Marshall Flow at 60°C, mm.	**343**	2.0 - 4.0

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NC/QC/BD/W5/2020-21/P1-1-BC7 Date: 20-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for BC mix sample.
{Project*: Improvements to roads and drains at Kattigenahalli Main and Cross, Sirinagara Nirantara Layout, Sri krishna Garden, Shivashankara Layout, Varaha Layout, Bindhu Layout, and Surrounding areas in Ward No- 05.}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Byatarayanapura Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

A. Type of Construction : **Bituminous Concrete**
1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **5.44 %**

2. **Gradation Test**
TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-17 of MORTH Specfications-2013 BC (Grading - 2)
19.0	**100**	100
13.2	**96.55**	90-100
9.5	**82.90**	70-88
4.75	**64.25**	53-71
2.36	**51.65**	42-58
1.18	**36.80**	34-48
0.600	**35.05**	26-38
0.300	**23.15**	18-28
0.150	**18.90**	12-20
0.075	**8.45**	4-10

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NC/QC/BD/W5/2020-21/P1-1-BS7 Date: 21-11-2020

1.TEST REPORT ON BITUMINOUS MIXES :
(STABILITY OF BITUMINOUS MIX)

Sub: To determine the stability of bituminous mix for BC mix sample.
{Project*: Improvements to roads, drains and other developmental works in Ward No- 01 &02. Under SWM head in Chief Minister Nava Nagarothana grants of Yelahanka division.(Package -07).}
Ref.: Material testing/PMC/20-21,
Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: M/s SMLP Asphalts, Prop : B B Umesh, Bangalore.

TEST RESULTS

Table 1: Properties of BC (Gr-2) Mix

Sl. No.	Test Property	*Test results obtained by Marshall method	Requirements of Bituminous Concrete, Grade-2 as per M.o.R.T&H (V Revision)-2013 Specifications
1	Marshall Stability (75 blows) (At 60°C), kgs.	**1346**	900
2	Marshall Flow at 60°C, mm.	**3.36**	2.0 - 4.0

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